

## Time Inter-Comparison Using Transportable Optical Combs, Phase I

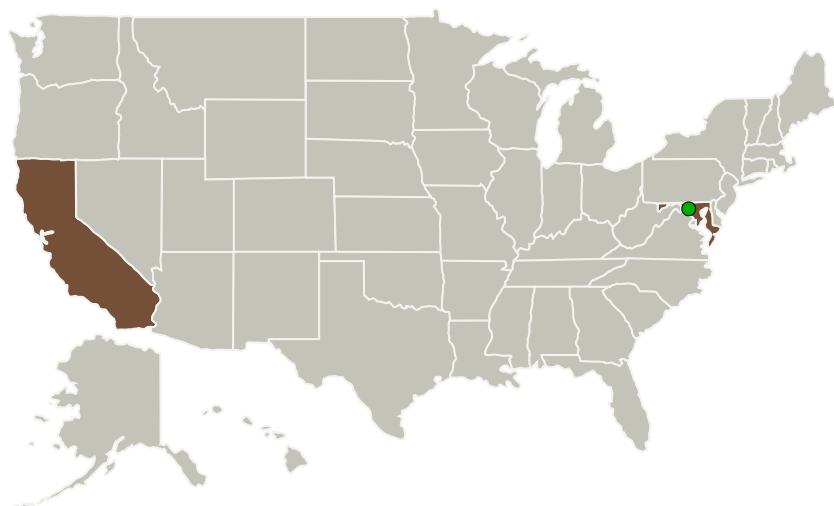


Completed Technology Project (2016 - 2016)

## Project Introduction

AOSense proposes a free-space, two-way optical time transfer system compatible with global-scale synchronization of current-generation optical atomic clocks. In Phase I, we will demonstrate the requisite performance using existing hardware coupled with off-the-shelf control electronics. Based on our results, we will design a fully-integrated module capable of disseminating timing signals with sub-femtosecond error from 1-10,000 s. Such a system would improve ground-to-satellite synchronization a million-fold over current RF-based time transfer systems.

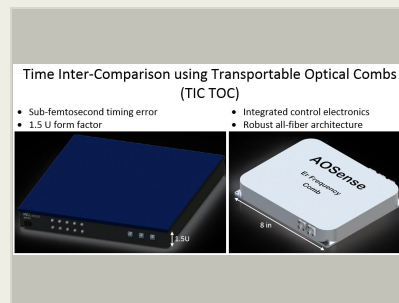
## Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
AOSense, Inc.	Lead Organization	Industry	Sunnyvale, California
 Goddard Space Flight Center(GSFC)	Supporting Organization	NASA Center	Greenbelt, Maryland

## Primary U.S. Work Locations

California	Maryland
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# Time Inter-Comparison Using Transportable Optical Combs, Phase I



Completed Technology Project (2016 - 2016)

## Project Transitions



**June 2016:** Project Start

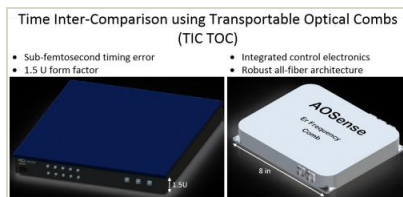


**December 2016:** Closed out

### Closeout Documentation:

- Final Summary Chart(<https://techport.nasa.gov/file/141130>)

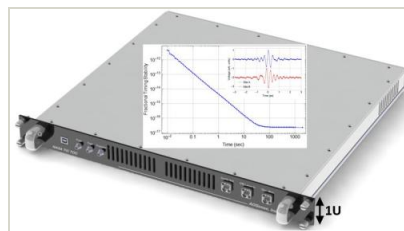
## Images



### Briefing Chart Image

Time Inter-Comparison using Transportable Optical Combs, Phase I

(<https://techport.nasa.gov/image/126010>)



### Final Summary Chart Image

Time Inter-Comparison using Transportable Optical Combs, Phase I Project Image

(<https://techport.nasa.gov/image/129796>)

## Organizational Responsibility

### Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

### Lead Organization:

AOSense, Inc.

### Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

## Project Management

### Program Director:

Jason L Kessler

### Program Manager:

Carlos Torrez

### Principal Investigator:

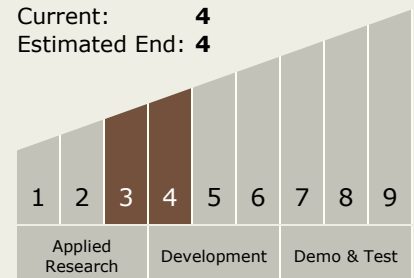
Arman Cingoz

## Technology Maturity (TRL)

Start: 3

Current: 4

Estimated End: 4



# Time Inter-Comparison Using Transportable Optical Combs, Phase I

Completed Technology Project (2016 - 2016)



## Technology Areas

### Primary:

- TX17 Guidance, Navigation, and Control (GN&C)
  - └ TX17.2 Navigation Technologies
    - └ TX17.2.3 Navigation Sensors

## Target Destinations

The Moon, Mars, Outside the Solar System, The Sun, Earth, Others Inside the Solar System